Subject/Title: GIS-12

GEOGRAPHIC ENTITY NAMING CONVENTIONS

Date Effective	**Revision Date Effective**
May 21st, 2010	

PURPOSE

Geographic Entity Naming Conventions standardize how Charlotte geospatial data are named to:

- Promote greater accessibility and improve usability for internal and external users of Charlotte GIS data
- Facilitate GIS integration with City business systems and support the City's service oriented architecture (SOA)
- Provide a foundation for change management practices for the City Enterprise GIS Business Object Model
- Advance alignment with State and Federal efforts to standardize geospatial data in support of the National Spatial Data Infrastructure (NSDI)

SCOPE

The Standard is established for GIS data maintained by and under the stewardship of the City of Charlotte for data published in the Enterprise GIS Spatial Data Warehouse (SDW) environment. Adherence to these conventions is a best practice for the management of the City's collective GIS data investment.

The Standard shall apply to the following:
- GIS data and associated relational databases managed, stored, and/or published on the SDW as a component of the City of Charlotte's Enterprise GIS data environment. This includes KBU-maintained and GIS data received by Mecklenburg County that are subsequently published data in the SDW (i.e., street centerline database and parcel database).
- GIS data converted, compiled, or acquired from vendors or contractors for delivery to the City of Charlotte that will ultimately be stored in the SDW environment.
- For purposes of ESRI GIS software terminology, this Standard applies to the following GIS data types:
    - Feature Datasets
    - Feature Classes
    - Relationship Classes
    - Layer Files
    - Folder Groups
    - Attribute Domains

BACKGROUND

City staff has been utilizing GIS technology since 1988 to facilitate the delivery of citizen services. To improve data administration, a centralized data repository was established in 2002 to provide common, shared access to GIS data between City KBUs and with Mecklenburg County. This shared, enterprise GIS database environment, referred to as the Spatial Data Warehouse (SDW), is accepted as the centralized GIS database that now supports hundreds of City users and numerous business applications and web services. The SDW has evolved into a critical data asset relied upon to support KBU service delivery.

Over the years as the City Enterprise GIS Program has evolved, the quantity and complexity of GIS data stored on the SDW has continued to increase which has complicated administration and usability by staff. Uniform naming conventions will further increase GIS database usage and broaden the integration into new areas of business by increasing the "discoverability" with the application of descriptive database names. The adoption of this standard will represent another milestone towards protecting and further solidifying the City's investment in its geospatial infrastructure.

DEFINITIONS

ArcGIS – ArcGIS is an integrated collection of GIS software products that provides a platform for spatial analysis, data management, and mapping. ArcGIS is the primary software of ESRI, one of the City's preferred GIS software vendors.

Attribute Domain - Attribute domains are rules that describe the legal values of a field type, providing a method for enforcing data integrity, and are used to constrain the values allowed in any particular attribute for a table or feature class.

Camel Case - First letter of each word capitalized, spaces and punctuation removed. Useful for technical situations where spaces are not allowed

Enterprise GIS Business Object Model – represents the Enterprise GIS data model and geographic entities that populate the model within City GIS databases.

Environmental Systems Research Institute (ESRI) – ESRI designs and develops geographic information system (GIS) technology. ESRI has been the City's preferred vendor for GIS software since the inception of GIS at the City of Charlotte in 1988.

Feature Class - In ArcGIS, a Feature Class is a collection of geographic features with the same geometry type (such as point, line, or polygon), the same attributes, and the same spatial reference. Feature classes can be stored in geodatabases, shapefiles, coverages, or other data formats. Feature classes allow homogeneous features to be grouped into a single unit for data storage purposes. For example, highways, primary roads, and secondary roads can be grouped into a line feature class named "roads." In a geodatabase, feature classes can also store annotation and dimensions.

Feature Dataset - A feature dataset is a collection of related feature classes that share a common coordinate system. Feature datasets are used to spatially or thematically integrate related feature classes. Their primary purpose is for organizing related feature classes into a common dataset for building a topology, a network dataset, a terrain dataset, or a geometric network.

Field Names - Field Names refers to the individual attribute columns within a feature class or table when looking at its data contents.

Geodatabase – A geodatabase is an ESRI data storage and management framework for ArcGIS. It combines "geo" (spatial data) with "database" (data repository) to create a central data repository for spatial data storage and management to support GIS software applications.

Geospatial Data – Geospatial data, also referred to as GIS data, provides information in a structured format that identifies the geographic location and characteristics of natural or constructed features and boundaries on earth.

GIS Enterprise Team (GET) – The GET is a team of City KBU representatives selected to oversee geographic information system strategies, standards, budget, and priorities to meet the City's business needs and advance comprehensive citizen service.

Layer Files – An abstraction from one or more feature classes or feature datasets used to present or organize data in a manner so that it may then be more easily analyzed.

Layer File Folder Groups – Layer Files can be organized into one or more Folder Groups as needed for reference purposes. Folder Groups are used to assist users with file navigation and organization.

Mixed Case - the first letter of words that run together should be capitalized

Relationship Classes - A Relationship Class is an operation that establishes a temporary connection between records in two Tables using a key common to both. The connection allows information in both tables to be viewed simultaneously while browsing the associated GIS spatial data in a Feature Class or Feature Dataset.

Spatial Data Warehouse (SDW) – The City of Charlotte stores and manages Enterprise GIS data within the shared, centralized geodatabase server environment referred to as the SDW.

<u>STANDARD</u>
The Geographic Entity Naming Conventions established with this Standard are presented in the following table:

Type	Description	Naming Convention	Character Limit	Case	Limitations & Conditions	Examples
Feature Dataset	The descriptive name of the Feature Dataset. The FeatureDatasetName does not contain underscores.	<FeatureDatasetName>	24	Camel	A. Feature Datasets should only be considered for use under the following conditions: 1. Participation in a topology, a terrain dataset, or a geometric network 2. Geometry is shared (e.g. Right-of-Way lines coincide with a parcel boundary polygon) 3. Special cases for certain history layers B. Those Feature Classes within the Feature Dataset should follow the Feature Class naming convention	LandUse
Feature Class	The FeatureClassName should be descriptive of the thematic contents. An underscore (_) separates the FeatureClassName from the featuretype abbreviation. The featuretype abbreviation indicates the geometry or data type for each feature class (see table in Limitations & Conditions) and shall be specified as the suffix of the feature class.	<FeatureClassName>_<featuretype abbreviation>	24	Mixed: FeatureClassName is Camel Case; Featuretype abbrevation is lower case.	A. Feature class names should not contain dates. The current feature class name shall not have a date as it will be the latest version by default. B. If a Feature Class is to be archived, use only the year to archive, do not include days or months. C. Use the following abbreviations for the <featuretype abbreviation> Feature Type featuretype abbreviation Annotation an Locators lo Network nt Point pt Polyline ln Polygon py Raster rs Region rg Route rt Terrain tr Topology to View – Point vt View – Polyline vl View – Polygon vp View – Table vb	CensusTracts_py MasterAddress_pt Topo2Ft_ln GeoClearToday_vt
Relationship Class Tables	Relationship Class Tables should follow the same general naming guidelines as feature class names but will be assigned the suffix of "tb".	<TableName>_tb	24	Mixed: TableName is Camel Case. Table suffix. "tb" is lower case.	Guidelines are only applicable to Feature Classes that use Relationship Class tables	SidewalkLookup_tb
Attribute Domain Names	Attribute Domain Names should be named with a prefix of "dom" and the name that matches the associated Feature Class or Relationship Class Table.	dom[DomainName]	24	Mixed: Domain prefix "dom" is lowercase. Domain Name is Camel Case.	In general, care should be taken to avoid potential conflicts that could result with the use of generic Attribute Domain Names. For example, an Attribute Domain Name of domType could be relevant in a single user database but if migrated to a multi user database like the SDW, conflicts could arise.	domJurisdictions
Field Names	Field Names (also referred to as Attributes in Feature Classes) should be short yet descriptive.	FieldName	Recommend 5-10 characters	Camel	A. Avoid the use of Microsoft SQL reserved keywords (TYPE, YEAR, etc.) for field names. For more information refer to the Microsoft SQL server documentation: http://msdn.microsoft.com/en-us/library/aa238507(SQL.80).aspx B. Alias names should be used for field names longer than 10 characters. C. Should the 10 character field name limit be exceeded, use the first 10 character spaces for unique identification. If the name is too long truncation will occur should a shape file be later created. If the name is too short, conflicts and/or confusion may occur during multiple table joins (i.e. use of "Dist_ID" vs. "ID" may confuse the data source). Example: "VeryVeryLongColumnA" and "VeryVeryLongColumnB" would both truncate to "VeryVeryLo" when creating a shape file. Alternatively, naming the fields to "ColumnAVeryVeryLong" and "ColumnBVeryVeryLong" would not result in duplicate truncated field names.	OwnerName StreetType

IMPLEMENTATION CONSIDERATIONS

The Geographic Entity Naming Conventions Standard will be implemented for all data stored in the City's SDW. The GIS Enterprise Team will be responsible for coordinating and communicating the use of the Standard with the KBUs.

The Geographic Entity Naming Conventions Standard will be applicable to all new geospatial data investments. The Technology Architecture Review Team (TART) will be responsible for initiating discussion with the GET for new data investments that flow through the Technology Project Evaluation Team (TPET) process to ensure compliance.

City KBU GIS staff have been offered training on the use of ArcGIS and have familiarity with the creation, editing, and maintenance of GIS data using ESRI software. These staff members possess an understanding for terminology used with these naming conventions. The Enterprise GIS Program will continue to coordinate on-going training opportunities to provide the technical foundation for application of the Standard.

COMPLIANCE

The City's GIS Enterprise Team (GET) shall be responsible for monitoring and measuring compliance. Monitoring will occur as KBU GIS data is loaded into the SDW environment administered by City BSS/IT.

The Geographic Entity Naming Conventions will be reviewed and updated annually to ensure continued applicability.

EXCEPTIONS

1. Existing GIS data residing on the SDW that are not compliant with this Standard must be subjected to the BSS/IT change control process to ensure usage, integration, and application dependencies are properly addressed in a systematic manner before being renamed. The change control process for non-compliant data will be initiated upon adoption of this Standard.
2. GIS data residing on the SDW used by specific business applications that only support data named in conventions other than those specified by this Standard.